Use of different types of plants for the uptake of contaminants

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At Escola Superior de Biotecnologia, we are conducting studies on the ability of several plants collected from polluted sites or effluent discharge spots to remove contaminants from water and soil.
Under this scope, we have screened *Phragmites australis*, *Solanum nigrum*, *Rubus ulmifolius* and *Convolvulus* sp., for the uptake of zinc, arsenic, mercury and lead. These plants were collected from soils contaminated with organic and inorganic pollutants derived from an industrial area. *S. nigrum* was found to be the one that presented higher capacity to accumulate zinc. This plant has been tested in a series of toxicity tests for this metal and is now being used in a growth experiment at several Zn concentrations (artificially prepared soils and soil derived from the area above mencioned). Broader sampling of *R. ulmifolius* and *P. australis* in the studied area also showed that zinc is accumulated preferentially in the roots.
Arbuscular Mycorrhizal Fungi (AMF) are a group of soil organisms of great ecological importance that form symbiotic associations with the majority of land plants, known as arbuscular mycorrhizas. The role of AMF in phytoremediation of heavy metals (HMs) is not clear and studies to allow an improvement of our knowledge on this topic are needed. We are presently studying the effect of different isolates of AMF (obtained from HM contaminated soils) associated with *Solanum nigrum* on Zn uptake. This will contribute to a better understanding of the importance of AMF in phytoremediation processes and rhizosphere interactions between plants and HMs.
We are also using plant systems to treat effluents derived from industrial activities, mainly from tannery sector. The effluent from this industry has a high organic load and, in most cases, the presence of chromium. The range of plants analysed comprise *Typha latifolia, Phragmites australis,* and *Iris pseudacorus*, and those were also obtained from discharge spots. Such studies are being undertaken in pilot scale units and the efficiency of removal is being monitored.

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